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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265				
			EXAMINER SIDDIQUI, SAQIB JAVAID	
			ART UNIT 2138	PAPER NUMBER

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/822,415

Applicant(s)

GUIDRY, DAVID WALKER

Examiner

Saqib J. Siddiqui

Art Unit

2138

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Oath/Declaration

The Oath filed July 06, 2004 complies with all the requirements set forth in MPEP 602 and therefore is accepted.

Drawings

The filed drawings are accepted.

Specification

The contents of the filed specification are accepted.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-21 are rejected under 35 U.S.C. 102(b) as being fully anticipated by Gearhardt et al. US Patent no. 5,701,309.

As per claim 1:

Gearhardt et al. teaches for testing semiconductor devices, a digital testing system (Figure 2) comprising: pattern memory for storing test vectors adapted for performing digital tests (Figure 2, # 80, column 5, lines 1-55); a digital test engine for implementing test vectors of the pattern memory (Figure 2 # 25), whereby digital inputs

Art Unit: 2138

are provided to a device under test (DUT) (Figure 2 # 70) and digital DUT outputs are captured (Figure 2 # 70), thereby testing the operability of the DUT (Figure 2 # 30).

As per claim 2:

Gearhardt et al. teaches the digital testing system as rejected in claim 1 further comprising: a multiplexer for interfacing the DUT with automatic test equipment (ATE) (column 1, lines 40-67); and ATE operably connected to perform testing on the DUT (Figure 2 # 25, column 4, 25-37).

As per claim 3:

Gearhardt et al. teaches the digital testing system as rejected in claim 1 wherein the digital testing system further comprises a testing module (Figure 3).

As per claim 5:

Gearhardt et al. teaches the digital testing system as rejected in claim 1, configured to perform scan testing (Figure 2, # 10).

As per claim 6:

Gearhardt et al. teaches the digital testing system as rejected in claim 1, configured to perform functionality testing (column 6, lines 50-58).

As per claim 7:

Gearhardt et al. teaches the digital testing system as rejected in claim 3, wherein the testing module comprises a hardware device (Figure 2 # 30).

As per claim 8:

Gearhardt et al. teaches the digital testing system as rejected in claim 3, wherein the testing module comprises firmware (Figure 2 # 27).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gearhardt et al. US Patent no. 5,701,309 and further in view of Lanier et al. US Patent no. 6,675,339 B1.

As per claim 4:

Gearhardt et al. substantially teaches a digital testing system (Figure 2) comprising: pattern memory for storing test vectors adapted for performing digital tests (Figure 2, # 80, column 5, lines 1-55); a digital test engine for implementing test vectors of the pattern memory (Figure 2 # 25), whereby digital inputs are provided to a device

under test (DUT) (Figure 2 # 70) and digital DUT outputs are captured (Figure 2 # 70), thereby testing the operability of the DUT (Figure 2 # 30).

Gearhardt et al. does not explicitly teach the system configured to perform mixed signal testing.

However Lanier et al. in an analogous art teaches a digital testing system configured to perform mixed signal testing (Abstract, lines 1-10). It would have been obvious to one of ordinary skill in the art at the time the invention was made enable the ATE in Gearhardt et al's invention to be able to generate mixed test signals, since one of ordinary skill in the art would have realized that enabling Gearhardt et al.'s invention to generate mixed test signals would have provided it the ability to test DUT's with different configurations and specifications, hence making their invention more encompassing.

Claims 9, & 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lanier et al. US Patent no. 6,675,339 B1.

As per claim 9:

Lanier et al. substantially teaches a digital testing system for adding digital test capability to an automatic test equipment (ATE) platform (Figure 1 # 20), the system comprising; automatic test equipment (ATE) adapted for performing analog testing of a device under test (DUT) (column 4, lines 25-35); and a testing module further comprising pattern memory (Figure 1 # 674), a test engine (Figure 1 # 20), and a multiplexer (Figure 22 # 714, column 29, lines 1-15), for performing digital testing on the DUT (Figure 1 # 50).

Lanier et al. discloses the claimed invention except for the location of the multiplexer. It would have been obvious to one having ordinary skill in the art at the time the invention was made incorporate the multiplexer within the ATE, since it has been held that rearranging parts of an invention involves only routine skill in the art. In *re Japikse*, 86 USPQ 70. Further it should be noted that claim 9 can be rejected under 102(e), since claim 9 does not disclose any location of the multiplexer, however examiner is giving a 103 keeping in consideration the location of the multiplexer in the invention.

As per claim 12:

Lanier et al. teaches the digital testing system as rejected in claim 9 above wherein the testing further comprises a high speed bus (Figure 3 # 94, column 8, lines 30-60).

As per claim 13:

Lanier et al. teaches the digital testing system as rejected in claim 9 above configured to perform scan mixed signal device testing (Abstract, lines 1-10).

As per claim 14:

Lanier et al. teaches the digital testing system as rejected in claim 9 above configured to perform scan testing (column 4, lines 24-65).

As per claim 15:

Lanier et al. teaches the digital testing system as rejected in claim 9 above configured to perform functionality testing (Figure 6 # 187, column 12, lines 20-40).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lanier et al. US Patent no. 6,675,339 B1 and further in view of Gearhardt et al. US Patent no. 5,701,309.

As per claim 10:

Lanier et al. teaches the digital testing system as rejected in claim 9 above.

Lanier et al. does not explicitly teach the digital testing system wherein the testing module further comprises DDR SRAM.

However, Gearhardt et al. in an analogous art teaches a digital testing system wherein the testing module further comprises DDR SRAM (Figure 2 # 80). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the DDR SRAM in the testing module, since one of ordinary skill in the art would have realized that enabling Lanier et al.'s invention to use the DDR SRAM in the invention would have accounted for higher speeds and lower power consumptions. Further it should be noted that Lanier et al. does not point out the kind of memory being used in the invention, which might even be the DDR SRAM.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lanier et al. US Patent no. 6,675,339 B1 and further in view of Sabih et al. US Patent no. 6,904,375 B1.

Lanier et al. teaches the digital testing system as rejected in claim 9 above.

Lanier et al. does not explicitly teach the digital testing system wherein the testing module further comprises an FPGA.

However, Sabih et al. in an analogous art teaches a digital testing system wherein the testing module further comprises an FPGA (column 2, lines 45-60). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use an FPGA in the testing module, since one of ordinary skill in the art would have realized that enabling Lanier et al.'s invention to use an FPGA in the invention eliminates or reduces the need for an instruction-based processor and eliminate the need for custom ASIC processing functions.

As per claims 16-21:

Claims 16-21 are directed to a method of the system of Claims 1-15. Gearhardt et al., Sabih et al. and Lanier et al., either alone or in combination as stated above, the system as set forth in Claims 1-4. Therefore, Gearhardt et al., Sabih et al. and Lanier et al. also teach, either alone or in combination as stated above, the method as set forth in Claims 16-21, wherein the device interface board is represented in Figure 2 # 25, Gearhardt et al. and Figure 1 # 16, Lanier et al.

Related Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional pertinent prior arts, US PG Pub no. (20040068699 A1, 20030208713 A1, 20030057990 A1, 20020063556 A1) and US Pat no. (6865706 B1, 6748564 B1, 6073261 A) mention the same digital testing system wherein an ATE is interfaced with a DUT are included herein for Applicant's review.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Saqib J. Siddiqui whose telephone number is (571) 272-6553. The examiner can normally be reached on 8:00 to 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Saqib Siddiqui
Art Unit 2138
03/17/2006


GUY LAMARRE
PRIMARY EXAMINER